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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,517	08/29/2001	Katsumi Hoshino	NIT-296	5216

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MATTINGLY, STANGER & MALUR, P.C.
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ALEXANDRIA, VA 22314

EXAMINER

MAGEE, CHRISTOPHER R

ART UNIT	PAPER NUMBER
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2653

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/940,517

Applicant(s)

HOSHINO ET AL.

Examiner

Christopher R. Magee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-18 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 10-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to because in Figure 15, reference numbers 121, 122, 126, 127 and 128 are not found in the specification. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because the length exceeds 150 words. Correction is required. See MPEP § 608.01(b).
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: MAGNETORESTIVE HEAD USING
MULTILAYERED VARISTOR MATERIAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 4, 6, 7, 9, 13, 15, 16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Akio (JP 11-265503).

- Regarding claims 1, 13 and 16, Akio shows a magnetoresistive head comprising a magnetoresistive layer (12) which converts magnetic signals to electric signals, a pair of electrodes (19, 20) for allowing an electrically sensing current to flow across said magnetoresistive layer, upper and under gap layers (15) placed over and beneath said pair of electrodes and said magnetoresistive layer, and upper and under shield layers (10, 11), one of which placed over said upper gap layer and the other placed beneath said under gap layer, wherein said pair of electrodes and at least either of said upper and under shield layers are electrically connected by varistor material (14) that also interconnects said pair of electrodes (19, 20) (Figure 1).

- Regarding claims 3, 15 and 18, Akio shows a magnetoresistive head comprising a magnetoresistive layer (12) which converts magnetic signals to electric signals, a pair of electrodes (19,20) for allowing an electrically sensing current to flow across said magnetoresistive layer, upper and under gap layers (15) placed over and beneath said pair of electrodes and said magnetoresistive layer, and upper and under shield layers (10, 11), one of

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which placed over said upper gap layer and the other placed beneath said under gap layer, wherein leads (not numbered) of said upper and under shield layers and leads (19a, 20a) extended out of lead terminals of said electrodes are connected by varistor material (14) on the side where a magnetoresistive element does not exist, when viewed from the lead terminals of said pair of electrodes (Figure 1).

- Regarding claims 4, 6, 7 and 9, Akio teaches the magnetoresistive head employs a material consisting of ZnO, SiC, BaTiO, Si, or SrTiO films or films whose main element is one of these substances as said varistor material (Sections 0041 to 0043 of Akio English Translation).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 5, 8, 14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akio (JP- JP 11-265503) in view of Sato (US 6,477,006 B1).

- Regarding claims 2, 14 and 17, Akio shows a magnetoresistive head comprising a magnetoresistive layer (12) which converts magnetic signals to electric signals, a pair of electrodes (19, 20) for allowing an electrically sensing current to flow across said magnetoresistive layer, upper and under gap layers (15) placed over and beneath said pair of electrodes and said magnetoresistive layer, and upper and under shield layers (10, 11), one of which placed over said upper gap layer and the other placed beneath said under gap layer.

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Akio does not teach or suggest either of the upper or under (i.e., lower) gap layers being made of varistor material.

Sato discloses the use of SiC (i.e., silicon carbide, known as a varistor material) as a gap layer material (col. 8, lines 15-21; col. 9, lines 39-42).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the upper and lower gap layers of Akio out of SiC as taught by Sato.

The rationale is as follows: One of ordinary skill in the art at the time of the invention would have been motivated to make either of the upper and lower gap layers of Akio out of SiC as taught by Sato because the gap layer can be formed by a sputtering or ion beam sputtering process which is superior to an electroplating process in reproducibility and uniformity of the resulting film (Sato; col. 9, lines 48-53).

- Regarding claims 5 and 8, Akio teaches the magnetoresistive head employs a material consisting of ZnO, SiC, BaTiO, Si, or SrTiO films or films whose main element is one of these substances as said varistor material (Sections 0041 to 0043 of Akio English Translation).

Allowable Subject Matter

7. Claims 10-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Magee whose telephone number is (703) 605-4256. The examiner can normally be reached on M-F, 8: 00 am-5: 30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (703) 305-6137. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

September 29, 2004


Christopher R. Magee
Patent Examiner
Art Unit 2653


GEORGE J. LETSCHER
PRIMARY EXAMINER